

PATENT

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Application of:	)	
	)	
Toshifumi Komatsu et al.	)	Examiner: B. Gilliam
	)	
Serial No.: 10/060,753	)	Group Art Unit: 1752
	)	
Filed: January 30, 2002	)	Docket: 970.0098US01
	)	
For: Ink Receptive	)	
Photosensitive Laminate	)	

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**APPELLANTS' BRIEF ON APPEAL**

Mail Stop Appeal Brief  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

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**1.     REAL PARTY IN INTEREST**

The real party in interest of the above-captioned patent application is the assignee,  
Ikonics Corporation.

**2.     RELATED APPEALS AND INTERFERENCES**

Applicant is aware of no prior or pending appeals, judicial proceedings or interferences which may be related to, directly affect or be directly affected by, or have a bearing on the Board's decision in the pending appeal.

**3.     STATUS OF THE CLAIMS**

Claims 1-3, 5-6, 9, 16-17, 19, 21-25 are pending in the application. Claims 1-3, 5-6, 9, 16-17, 19, 21-25 have been rejected and are now subject to this appeal. Claim 16 is hereby cancelled without prejudice. Rejections of pending claims 1-3, 5-6, 9, 17, 19, 21-25 is appealed. A complete listing of the pending claims is provided in the Claims Appendix at the end of this brief.

**4.     STATUS OF AMENDMENTS**

The last office action was mailed on October 30, 2006. In response, Applicant filed a notice of appeal. Applicant does not believe that any outstanding amendments have not been entered.

## **5. SUMMARY OF THE INVENTION**

The present invention is directed, in part, to a photosensitive laminate structure of independent claim 1. This structure comprises at least an ink receptive, radiation transmissive layer, said ink receptive, radiation transmissive layer comprising a water-soluble, inkjet-receptive material transmissive to light of general wavelength 300 to 450 nm, containing at least 20 dry weight percent polyvinyl alcohol, and further containing calcium carbonate; and at least one photosensitive resist layer; wherein the photosensitive resist layer comprises a pressure sensitive adhesive composition having a  $T_g$  of less than about  $-40\text{ }^{\circ}\text{C}$ ; and wherein the photosensitive layer comprises from 1 to 40 weight percent of a polymeric photosensitive resin and from 30 to 98 weight percent of a polyvinyl acetate based upon the total dry weight of the photosensitive layer; and wherein the ink receptive, radiation transmissive layer comprises less than 40 dry weight percent calcium carbonate. Support for claim 1 is found, for example, at page 2, line 13 to page 3, line 19; page 7, lines 13 to 18; page 10, line 14 to page 11, line 2; page 14, line 16; page 15, line 9; and page 22, line 8.

The present invention is further directed to a method of forming a relief pattern in a photoresist substrate of independent claim 23. This method comprises providing a photosensitive laminate structure comprising at least an ink receptive, radiation transmissive layer comprising polyvinyl alcohol and inorganic particles, and at least one photosensitive resist layer formed into a single, photosensitive laminate printing a pattern on the ink receptive, radiation transmissive layer; exposing the laminate to actinic radiation to modify the photosensitive resist layer; and removing a portion of the photosensitive resist layer corresponding to the pattern formed on the ink receptive, radiation transmissive layer. Support

for claim 23 is found, for example, at page 4, lines 8 to 20, and page 19, line 7 to page 20, line 6.



**6. ISSUES PRESENTED FOR REVIEW**

- A. Whether claims 1-3, 5-6, 9, 17, 19, 21-22 are non-obvious under 35 U.S.C. § 103 as being unpatentable over Hoogmartens et al. U.S. 5,922,506 in view of Asano et al. U.S. 6,106,992.
  
- B. Whether claims 23-25 are non-obvious under 35 U.S.C. § 103 as being unpatentable over Hoogmartens et al. U.S. 5,922,506 in view of Asano et al. U.S. 6,106,992.

## **8. ARGUMENT**

### **A. Claims 1-3, 5-6, 9, 17, 19, 21-22 are non-obvious under 35 U.S.C. § 103 over Hoogmartens et al. U.S. 5,922,506 in view of Asano et al. U.S. 6,106,992.**

Claims 1-3, 5-6, 9, 17, 19, 21-22 have been rejected under 35 U.S.C. § 103 as being unpatentable over Hoogmartens et al. U.S. 5,922,506 in view of Asano et al. U.S. 6,106,992. The Examiner has asserted that it would be obvious for one of skill in the art to combine Hoogmartens with Asano. Applicants respectfully disagree because Hoogmartens and Asano completely fail to teach an ink receptive layer, the use of calcium carbonate in Asano is only in internal layers that are clearly unavailable for printing; and Asano merely uses calcium carbonate as a filler, not to create an ink receptive layer.

#### **1. Hoogmartens and Asano completely fail to teach an ink receptive layer.**

As a first matter, Applicants emphasize that nothing in either of the cited references teaches the use of an ink receptive layer. With the failure to teach or suggest every element of the claimed invention, Applicants believe the combination of references falls short of being adequate for establishing obviousness of the claimed invention.

The examiner provides no basis for asserting that either Hoogmartens or Asano teach an ink receptive layer. This fact is particularly problematic because both references teach that a removable mask or similar element must be used to expose a photosensitive laminate. For example, Hoogmartens states that an imaging element is used to control exposure of the photosensitive layers. See column 13, lines 57 to 64. Similarly, Asano shows the use of imaging masks in figures 7B and 9B. Neither of these references teach that a single laminate can

be used as both the photosensitive resist and the masking layer (in the present case, the masking layer formed by an ink receptive layer).

In view of the fact that each of Hoogmartens and Asano teach use of a separate masking layer to imagewise expose a photosensitive layer, Applicants do not believe one of skill in the art would consider the claimed invention to be obvious, since the present claimed invention does not use a preformed, separate masking layer/ imaging element.

**2. The use of calcium carbonate in Asano is only for internal layers that are clearly unavailable for printing.**

Even if one ignores the clear teachings of Hoogmartens and Asano, which fail to include use of an integrated masking layer comprising by an ink receptive layer, the invention is further non-obvious in light of the fact that the only layer in Asano or Hoogmartens that even arguably contain an ink-receptive composition is a layer in Asano that is placed on the interior of the laminate, where it could not be used for printing. As is apparent from FIG. 5A of Asano, this photosensitive resin layer 512 is encased within other layers, including base films 511 and release layer 516. These additional layers, along with the separate PSA layer 514, necessitate that any calcium carbonate mixed with the photosensitive resin would not be exposed at any surface of the laminate 510, thereby preventing any access to the calcium carbonate as a printing substrate.

Thus, Asano teaches away from the present invention by encasing the calcium-carbonate layer. One of skill in the art would not look to such an internal layer for a suitable printable layer, because this layer is buried beneath other layers. Certainly, this teaching of Asano is inadequate to make obvious the claimed invention

**3. Asano merely uses calcium carbonate as a filler, not to create an ink receptive layer.**

Furthermore, the teachings of Asano as they relate to calcium carbonate are basically to use the calcium carbonate as a filler. These teachings of Asano are in direct conflict with the teachings and claims of the present invention, because Asano uses calcium carbonate as an internal filler material in an internal region of a laminate, rather than exposed to the exterior to be an ink receptive layer. See, for example, column 14, lines 55 to 67, cited by the examiner, of Asano. It is clearly stated that the use of a filler, such as calcium carbonate, enables expensive photosensitive resin to be replaced with inexpensive powder. This teaching is in contrast to the claimed use of calcium carbonate as a printable layer over the top of the laminate.

When making an obviousness determination, a claimed invention must be considered as a whole. One must avoid hindsight and step back in time just before the invention was made into the mind of a hypothetical "Person of Ordinary Skill in the Art" who does not know the invention. *In re Dembiczak*, 175 F.3d, 994, 999; 50 U.S.P.Q.2d 1614, 1618 (Fed. Cir. 1999). The phrase, "at the time the invention was made" is important to consider so as to guard against applying hindsight. *Id.* To avoid the "powerful attraction" of hindsight requires a rigorous application of showing the teaching or motivation to combine prior art references. *Id.*

In *Dembiczak*, the appellants' claims in their patent application were directed toward a large trash bag made of orange plastic that when filled with trash or leaves would resemble a Halloween-style pumpkin or jack-o'-lantern. The claims specified "facial indicia" on the outer surface of the bag. *Id.* at 995; 1615. Among the references cited by the examiner in an obviousness rejection under 35 U.S.C. 103 were "conventional" plastic lawn bags and a

children's book describing a method of making a "paper bag pumpkin" by stuffing a bag with newspapers, painting it orange, and then painting on facial features with black paint.

The Federal Circuit emphasized that obviousness rejections require a clear and particular showing of the teaching or motivation to combine prior art references, which most often comes from the teachings of the pertinent references, and must be supported by actual evidence. *Id.* at 999; 1618. The Federal Circuit also stated that close adherence to the methodology for analyzing 103 rejections is "especially important in the case of less technologically complex inventions, where the very ease with which the invention can be understood may prompt one 'to fall victim to the insidious effect of a hindsight syndrome wherein that which only the inventor taught is used against its teacher.'" *Id.* at 999; 1617, quoting *W.L. Gore & Assocs., Inc. v. Garlock, Inc.*, 721 F.2d 1540; 220 U.S.P.Q. 303 (Fed. Cir. 1983).

In the present case, the two prior art references, when taken as a whole, simply fail to make obvious the claimed invention.

**B. Claims 23-25 are non-obvious under 35 U.S.C. § 103 over Hoogmartens et al. U.S. 5,922,506 in view of Asano et al. U.S. 6,106,992.**

With regard to claims 23-25, Applicants reiterate the earlier arguments that Hoogmartens and Asano completely fail to teach an ink receptive layer, the use of calcium carbonate in Asano is only in internal layers that are clearly unavailable for printing; and Asano merely uses calcium carbonate as a filler, not to create an ink receptive layer.

These arguments are even more relevant to claims 23 to 25, which are directed to method claims, which require providing a photosensitive laminate structure comprising at least an ink

receptive, radiation transmissive layer comprising polyvinyl alcohol and inorganic particles, and at least one photosensitive resist layer formed into a single, photosensitive laminate printing a pattern on the ink receptive layer, radiation transmissive layer; exposing the laminate to actinic radiation to modify the photosensitive resist layer; and removing a portion of the photosensitive resist layer corresponding to the pattern formed on the ink receptive, radiation transmissive layer.

The examiner appears to ignore the limitation of the claims requiring a photosensitive laminate printing a pattern on the ink receptive layer, without providing any evidence of why one of skill in the art would find such a teaching obvious. Applicants believe that the teaching of Hoogmartens and Asano, both of which require some sort of independent imaging sheet or mask, clearly teaches away from the present invention. Why would one of skill in the art, having Hoogmartens and Asano before them, believe there is any need for an ink receptive layer? Even if such a person of skill in the art did believe such a need existed, there is no evidence they could use these two references to satisfy such a need. Simply put, there would be no reason to even identify such problems exist, and further no reason to view either reference as providing a solution to the problem. In such circumstances the teachings of Hoogmartens and Asano cannot be regarded as making obvious the claimed invention.

**9. Summary**

Applicants believe the obviousness rejections of the appealed claims to be misplaced because Hoogmartens and Asano completely fail to teach an ink receptive layer, the use of calcium carbonate in Asano is only in internal layers that are clearly unavailable for printing; and Asano merely uses calcium carbonate as a filler, not to create an ink receptive layer.

Respectfully submitted,

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By their Representatives,

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## **APPENDIX I**

### **The Claims on Appeal**

#### **Listing of Claims:**

1. (Previously Presented) A photosensitive laminate structure comprising at least:
  - a) an ink receptive, radiation transmissive layer, said ink receptive, radiation transmissive layer comprising a water-soluble, inkjet-receptive material transmissive to light of general wavelength 300 to 450 nm, containing at least 20 dry weight percent polyvinyl alcohol, and further containing calcium carbonate; and
  - b) at least one photosensitive resist layer;wherein the photosensitive resist layer comprises a pressure sensitive adhesive composition having a  $T_g$  of less than about  $-40\text{ }^{\circ}\text{C}$ ;  
and wherein the photosensitive layer comprises from 1 to 40 weight percent of a polymeric photosensitive resin and from 30 to 98 weight percent of a polyvinyl acetate based upon the total dry weight of the photosensitive layer; and  
wherein the ink receptive, radiation transmissive layer comprises less than 40 dry weight percent calcium carbonate.
2. (Original) The photosensitive laminate structure of claim 1, further comprising a carrier layer.
3. (Original) The photosensitive laminate structure of claim 2, wherein the carrier layer



comprises polyester, biaxially oriented polypropylene, high density polyethylene, low density polyethylene, or other polymer films.

4. Canceled.

5. (Original) The photosensitive laminate structure of claim 1, wherein the ink receptive, radiation transmissive layer is removable from the photosensitive resist layer upon exposure to water.

6. (Original) The photosensitive laminate structure of claim 1, wherein the ink receptive, radiation transmissive layer has anti-block properties.

7. Canceled.

8. Canceled.

9. (Original) The photosensitive laminate structure of claim 1, wherein the ink receptive, radiation transmissive layer comprises polyvinyl alcohol, a polyethylene dispersion, or a mixture thereof.

10. Canceled.

11. Canceled.
12. Canceled.
13. Canceled
14. Canceled.
15. Canceled
16. Canceled
17. (Original) The photosensitive laminate structure of claim 1, wherein the ink receptive, radiation transmissive layer comprises a printable cover sheet.
18. Canceled.
19. (Original) The photosensitive laminate structure of claim 1, wherein the photosensitive layer comprises a photo crosslinked, aqueous developed polyvinyl alcohol-based polymeric resin.
20. Canceled.

21. (Original) The photosensitive laminate structure of claim 1, further comprising a membrane layer.
22. (Original) The photosensitive laminate structure of claim 21, wherein the membrane layer comprises polyvinyl alcohols, polyvinyl butyral, polyvinyl formal, polyurethane, nitrocellulose, a polyvinyl pyrrolidone copolymer, and urethane acrylic polymers.
23. (Previously presented) A method of forming a relief pattern in a photoresist substrate, the method comprising:
- a) providing a photosensitive laminate structure comprising at least an ink receptive, radiation transmissive layer comprising polyvinyl alcohol and inorganic particles, and at least one photosensitive resist layer formed into a single, photosensitive laminate;
  - b) printing a pattern on the ink receptive, radiation transmissive layer;
  - c) exposing the laminate to actinic radiation to modify the photosensitive resist layer; and
  - d) removing a portion of the photosensitive resist layer corresponding to the pattern formed on the ink receptive, radiation transmissive layer.
24. (Original) The method according to claim 23, further comprising removing the ink receptive, radiation transmissive layer.

25. (Original) The method according to claim 24, wherein the ink receptive, radiation transmissive layer is removed following application of water.